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WATER QUALITY MEMORANDUM
Utah Coal Regulatory Program

December 30, 2011

TO: Internal File

THRU: Steve Christensen, Permit Supervisor SC

FROM: Ken Hoffman, Hydrologist KH

RE: 2011 Second Quarter Water Monitoring, Alton Coal Development LLC, Coal Hollow, C/025/0005, WQ11-2, Task ID #3832

The Coal Hollow mine is an active surface mine. The permit application was approved on October 15, 2009 and a Permit was issued to Alton Coal Development, LLC (ACD) on November 8, 2010. Mining activity commenced in November 2010. Surface mining of coal at the Coal Hollow mine is expected to continue for approximately three years.

The water monitoring program for the Coal Hollow mine is described in Section 731.200 of the MRP. Water monitoring locations are listed in Table 7-5 and shown on Drawing 7-10. Monitoring protocols are described in Table 7-4 and the specific protocol(s) assigned for each location are listed in Table 7-5. Operational/Reclamation and Baseline monitoring parameters are listed for surface water on Table 7-6A and Table 7-6B, respectively, and for groundwater on Table 7-7A and 7-7B, respectively. Special Condition No. 4 of the mine Permit requires the Permittee to monitor for selenium where water leaves the minesite, during operational and reclamation phases.

This report was prepared from monitoring data queried from the UDOGM database. The data that support this report were collected and submitted to the database by Alton Coal Development (ACD).

1. Were data submitted for all required sites?

Springs YES [X] NO [ ]

Twelve springs are monitored quarterly (Table 7-5). All of the spring locations except one (SP-3) are located in Sink Valley Wash (Drawing 7-10). Spring location SP-19 is not shown on Drawing 7-10, but is shown on Drawing 7-1 (Spring and Seep Locations). Eight springs are monitored for field parameters only: Sorensen Spring, SP-3, SP-14, SP-16, SP-19, SP-20, SP-22 and SP-23. Four springs are monitored for field parameters and laboratory analyses: SP-4, SP-6, SP-8 and SP-33.

All springs were monitored during the second quarter 2011. Flow measurements were recorded at the following spring sites:

SAMPLE	SITE	Flow (gpm)
SORENSON SPRING	Alluvial spring Sink Valley	0.16
SP-14	Alluvium - Sink Valley	1.47
SP-16	(Teal Spring) - Alluvium - Sink Valley	0.875
SP-19	(Sorenson Pond)- Alluvium - Sink Valley	<0.1
SP-20	Alluvium - Sink Valley	9.01
SP-22	Alluvium - Sink Valley	0.65
SP-23	Alluvium - Sink Valley	<0.1
SP-3	Pediment Alluvium - Lwr Sink Valley Wash	6.67
SP-33	(Johnson Spring) - Alluvium - Sink Vlly	19.5
SP-4	Alluvium/Fault? - Lwr Sink Valley Wash	0.74
SP-6	Alluvium - seep in Sink Valley	<5
SP-8	Alluvial spring at Dames Ranch	19.8

Notes: Data were collected from March 26-28, 2011. Regional Palmer Hydrologic Index Value: 4.78

Streams YES [X] NO [ ]

Ten stream sites are monitored quarterly. Field parameters and laboratory analyses are performed for SW-2 (Kanab Creek below Robinson Creek); SW-3 (Kanab Creek above permit area); SW-4 and SW-5 Lower Robinson Creek [LRC] above permit area and above Kanab Creek, respectively); SW-6 (Sink Valley wash at permit boundary); SW-8 (Swapp Hollow Creek above permit area); and SW-9 (Sink Valley Wash below permit area). Field parameters only are measured at locations BLM-1 (LRC adjacent to mined areas); RID-1 (irrigation ditch in Robinson Creek); and SW-101 (LRC in permit area).

All required stream sites were monitored for the quarter during May 31, 2011 to June 3, 2011. No flow was present for stream monitoring sites SW-4 and SW-6. Flows reported for Lower Robinson Creek averaged 74 gpm. Flow ranges from Kanab Creek averaged 1,262 gpm; Swapp Hollow 115 gpm; and Sink Valley Wash at 0.172 gpm.

Wells YES [X] NO [ ]

Table 7-5 identifies 32 wells which will be monitored quarterly when accessible. Wells will be monitored for water elevation only except for five wells, which will be monitored for water elevation and laboratory parameters: Y-61 (artesian Sink Valley alluvium above mining), LR-45 (LRC alluvium below mining), LS-85 (artesian Sink Valley alluvium below mining), SS-30 (Sink Valley alluvium below mining) and UR-70 (LRC alluvium above mining). Several wells are expected to be destroyed or rendered inoperable due to mining activities (MRP page 7-59). These wells are to be monitored quarterly until they are destroyed or rendered inoperable.

All groundwater wells were monitored during second quarter 2011 including well LS-28 which was sampled for analytical parameters where only gauging was required.

UPDES YES [X] NO [ ]

Discharges from the Coal Hollow mine are authorized under UPDES General Permit for Coal Mining application number UTG040027. The UPDES permit, which expires on April 30, 2013, authorizes discharges from five outfalls: 001, 001B, 002, 003 and 004. These outfalls correspond to sediment ponds 1, 1B, 2, 3 and 4. Sediment pond locations are shown on Drawing 5-25. The UPDES permit identifies monitoring frequency and required parameters, effluent limitations, and storm water requirements. To date sediment ponds 1, 1B, 2 and 3 have been constructed.

The Operator has submitted discharge monitoring report (DMR) data electronically to the Division's water database this quarter. Special Condition No. 1 of the mine Permit requires the Operator to submit water quality data for the Coal Hollow Mine in an electronic format through the Electronic Data Input web site. All UPDES locations were monitored monthly during the second quarter 2011. Ponds 3 discharged and effluent water was sampled on April 25, 2011.

2. Were all required parameters reported for each site?

Springs YES [X] NO [ ]

Streams YES [X] NO [ ]

Stream samples were analyzed for the required operational monitoring parameters specified in the MRP. Special Condition No. 4 of the mine Permit requires the Permittee to monitor for selenium where water leaves the minesite, during operational and reclamation phases. Samples from stream sites SW-2, SW-3, SW-5, SW-8, and SW-9 were analyzed for dissolved selenium. The Operator should update the water monitoring section of the MRP to clearly indicate the locations and frequencies where dissolved selenium monitoring will be performed to comply with Permit Condition No. 4.

Wells **YES [X] NO [ ]**

UPDES **YES [ ] NO [X]**

The Operator has submitted discharge monitoring report (DMR) data electronically to the Division's water database. In addition to the monitoring requirements established by the UPDES permit, Special Condition No. 4 of the mine Permit requires the Permittee to monitor for selenium where water leaves the minesite, during operational and reclamation phases. The operator analyzed the sample for total selenium, not dissolved selenium from discharge samples collected on April 25, 2011, as required by Permit Condition No. 4.

3. Were irregularities found in the data?

Springs **YES [X] NO [ ]**

SP-14 bicarbonate, dissolved magnesium, total cations, cation-anion balance -June
SP-20 bicarbonate, dissolved cadium, dissolved magnesium, total cations, cation-anion balance - June
SP-33 Specific conductance, bicarbonate, chloride, cation-anion balance - June
SP-4 bicarbonate, cation-anion balance - June
SP-8 total dissolved solids, bicarbonate, cation-anion balance - June

Streams **YES [X] NO [ ]**

RID-1 flow - June
SW-2 bicarbonate, dissolved calcium, cation-anion balance - June
SW-5* bicarbonate, chloride, cation-anion balance - June
SW-8 bicarbonate - June
SW-9 total dissolved solids, bicarbonate, chloride, dissolved sodium, sulfate (big change), total cations, total anions, cation-anion balance - May

* - Sample notes for SW-5 state "Alt. location, sampled above irrigated fields"

Wells **YES [X] NO [ ]**

C1-24 depth - June
LR-45 conductance, total dissolved solids, bicarbonate, dissolved calcium, chloride, sulfate, total cations, total anions - June
LS-28 dissolved magnesium, dissolved sodium, total cations, total anions - June
LS-85 bicarbonate, dissolved calcium, dissolved magnesium, dissolved sodium - June
SS-30 bicarbonate, dissolved calcium, dissolved magnesium, dissolved sodium, total cations - June
UR-70 bicarbonate, dissolved calcium, dissolved sodium, total cations, cation-anion

balance - June
Y-61 bicarbonate, dissolved calcium, , dissolved magnesium, dissolved sodium, total-cations, cation-anion balance - June
Y-63 depth - June

UPDES YES [ ] NO [X]

Total Dissolved Solids (TDS) was reported at concentrations exceeding the 500 mg/L threshold, however the loading was well below the 2,000 lbs/day mass loading limit.

UPDES exceedances from first quarter of 2011 were discussed with the Utah Division of Water Quality (UDWQ) and discrepancies between the DMR submitted by the mine to UDWQ and data in the UDOGM database were discovered. To resolve this discrepancy the original laboratory reports were requested from the mine on December 15, 2011.

4. On what date does the MRP require a five-year resampling of baseline water data.

Re-sampling for baseline parameters is due every five years during the third or first quarter. Baseline parameters for surface water and groundwater monitoring are listed in Table 7-6B and Table 7-7B, respectively. Assuming that the five-year baseline resampling will coincide with permit renewal, the next baseline resampling is due during third or fourth quarter 2015.

5. Based on your review, what further actions, if any, do you recommend?

The Operator should submit the following changes as an amendment to the MRP:

- UPDES samples should be monitored for ***dissolved*** Selenium, not ***total*** Selenium, in accordance with Permit Condition No. 4.

Please be aware that with the impending permitting action of expanding the mine into the Federal coal lease areas, it is imperative that baseline data collection for those areas begin to a minimum of two years prior to permit revision approval. The regulations under R645-301-724.100 and 724.200 require that groundwater and surface water data be gathered to assess seasonal quality and quantity. Division guidance document Tech-004 recommends a minimum of two years of baseline data collection be completed prior to permit issuance or revision. Please update the Division as to the status of the baseline data collection activities for proposed expansion areas.

Does the Mine Operator need to submit more information to fulfill this quarter's monitoring requirements? YES [X] NO [ ]

- The mine needs to submit the original laboratory reports for UPDES-003 from March 16, 2011.

6. Follow-up from last quarter, if necessary.

- Revise MRP Drawing 7-10 (Water Monitoring Locations) to show spring monitoring location SP-19; and

- Revise the monitoring discussion in the MRP and associated tables to specify the locations and frequencies where selenium monitoring will be performed in accordance with Permit condition No. 4.

- The Operator needs to submit UPDES monitoring data for fourth quarter 2010 to the DOGM water database.

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